DESIGN OF QUALITY SYSTEM DOCUMENTATION IN HYDROTILLER PRODUCTION UNIT AS IMPROVEMENT OF QUALITY MANAGEMENT SYSTEM IN CV CITRA DRAGON

Abstract: CV Citra Dragon is one of the medium industries producing equipment and agricultural machinery (alsintan) in West Sumatra. CV Citra Dragon needs to implement a quality management system (QMS) to win the competition as a result of globalization. QMS applied in CV Citra Dragon is still limited to a single product that is rice thresher machine (tresher). Therefore, the scope of the quality management system in the company needs to be extended to other products that is hydrotiller or tractor turtle which is one of the two main products produced by CV Citra Dragon. QMS is a set of documented procedures and standard practices for the management system that aims to ensure compliance with the requirements of the process and the products that have been set. The existence of a well-documented quality system is important for a company or organization in implementing quality management systems. Therefore, it is necessary to design a quality system documents on CV Citra Dragon related to hydrotiller production process. The design of quality system documents in this research is based on the ISO 9001: 2008. Quality systems documents are required and made in the study include three levels of documentation, the procedures, work instruction, and form.

Keywords : *Quality Management Systems (QMS), ISO 9001:2008, procedures, work instructions, forms*

1 Introduction

QMS is a set of documented procedures and standard practices for the management system that aims to ensure compliance with the requirements of the process and the products that have been set. Currently, CV Citra Dragon has implemented a quality management system that refers to the requirements in the international standard ISO 9001: 2008 and *Standar Nasional Indonesia* (SNI) for products standard. The scope of the quality management system that implemented in alsintan production process is limited to one type of product, rice thresher machine type straw thrower (tresher). Since it only focused on one product only, there is a need to extend the QMS to other products that is hydrotiller. Hydrotiller also called tractor turtle is one of the two main products produced by CV Citra Dragon. Only general documents exist for the hydrotiller production, and there are no specific documents related to hydrotiller.

The existence of a well-documented quality document is important for a company or organization in implementing quality management systems. A documented quality system aims to ensure compatibility between the process and the product of the particular needs or requirements. Besides, a good quality system documentation can increase customer trust on the consistency of product quality. According to Dwi et al. (2012), the implementation of QMS in era of globalization has a significant role in small and medium industries (SMEs) to improve competitiveness. By implementing the ISO 9000 QMS, SMEs can provide assurance about the quality consistency as demanded by consumers and can increase efficiency in the production process because it can minimize

failure in producing the product (Sinaga, 1998). In addition, the higher level of quality management implementation will affect positively on the financial and non-financial performance (Pandjaitan, 2011). Recognizing the importance of the application of quality management for SMEs to compete with other firms, it is necessary to design a quality system documents for implementing QMS to fulfil SNI certification. The purpose of this study is Designing quality management system documents, the standard operating procedures (SOPs), work instructions (WI), and documents for records (form).

2 Stages in Preparation of Quality System Document in SMEs

Steps are being taken in preparing and developing the quality system documents in this study includes three main phases, namely the evaluation of the initial conditions, the determination of document needs, and develops quality system documents. In the first stage, the information about the entire processes in the company are collected that includes the type of processes, input and output processes, workflow and interaction between processes, in charge of the process, making the business process, and each activity in the process. In the second stage, the required document determined by analysing business processes and activities in each process based on the quality system standards used. At the final stage, the preparation of quality documents done by identifying the sequence of a job, the person in charge of the work, and determine the need to do a recording of a job. Figure 1 shows the stages in preparation of quality system document.

3 Evaluation of Initial Conditions

CV Citra Dragon has implemented a quality management system based on the international standards, ISO 9001: 2008, in carrying out its activities in producing *alsintan.* The scopes of the quality management system are covering management of main processes and supporting processes. Financial management is not included in the quality management systems. In Figure 2 shows the interaction between the process and the main process illustrating the processes that are directly related to the product. Therefore, to expand the scope of the quality management system in product hydrotiller will require creating a quality management system documents relating to the main process.

Processes that exist in CV Citra Dragon consist of the main processes, supporting processes, and policies. There are six main processes, namely marketing, planning, purchasing, quality control (QC) and quality assurance (QA), production, warehouse and shipping / transportation. The activities of marketing process are receiving customer demand, receiving customer complaints, and measuring customer satisfaction. The activity of planning process is to plan production based on demand from consumers. The activities of purchasing process are: make purchasing order, receive raw materials, verify the raw materials, return the raw materials to suppliers if the material does not fulfil the specifications, and supplier evaluation. The activities of QA/QC process are inspections of raw materials, inspection of semi-finished products, inspections of finished product / final, design and development of products, and identification of the product. The activities of production process are establishing design and development stages, producing products, and perform rework on a product that

does not meet specifications. The activities of warehouse and delivery process are store raw materials, store the finished product, and product delivery.

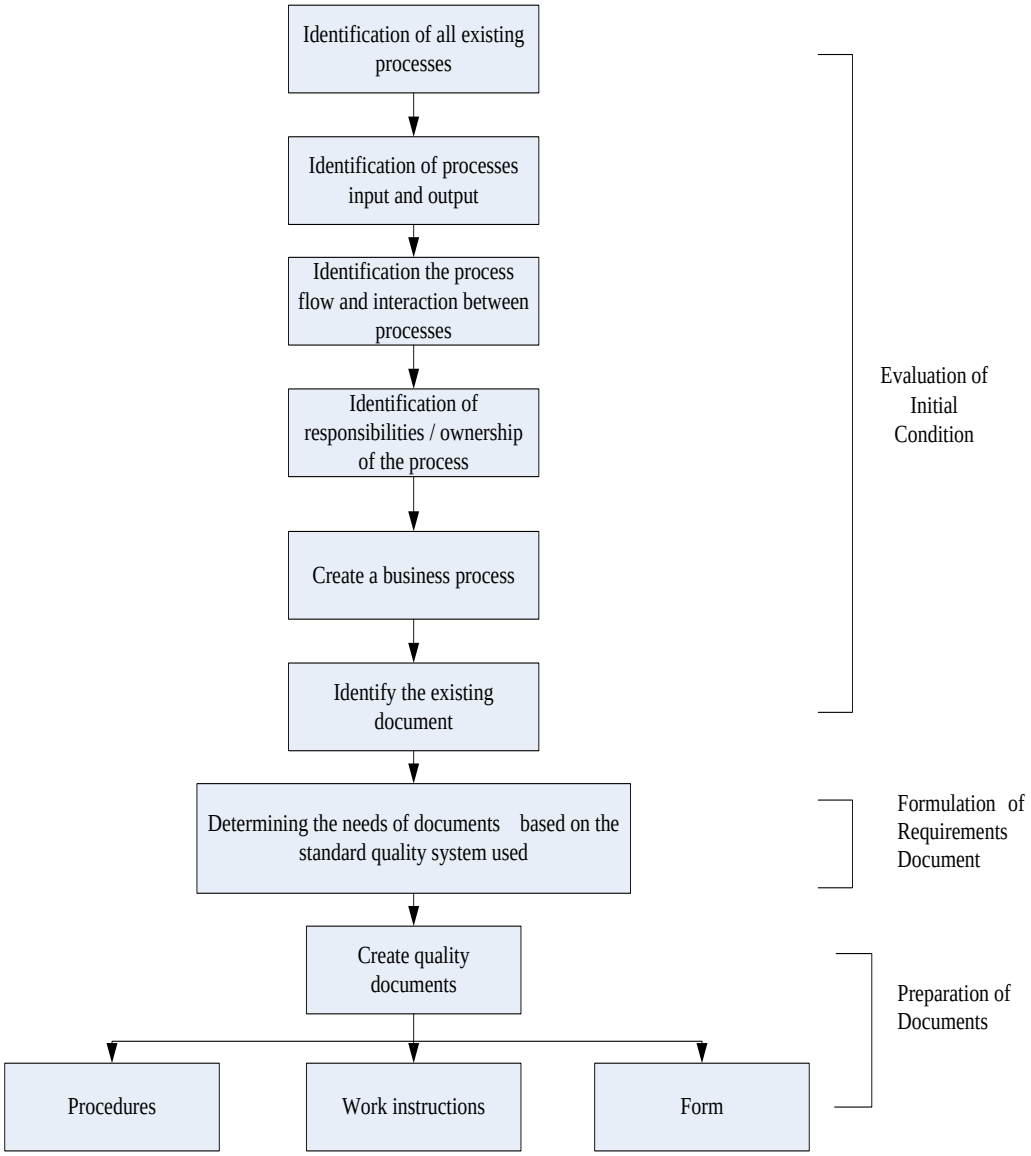

Figure 1 Stages of Preparation Quality System Document

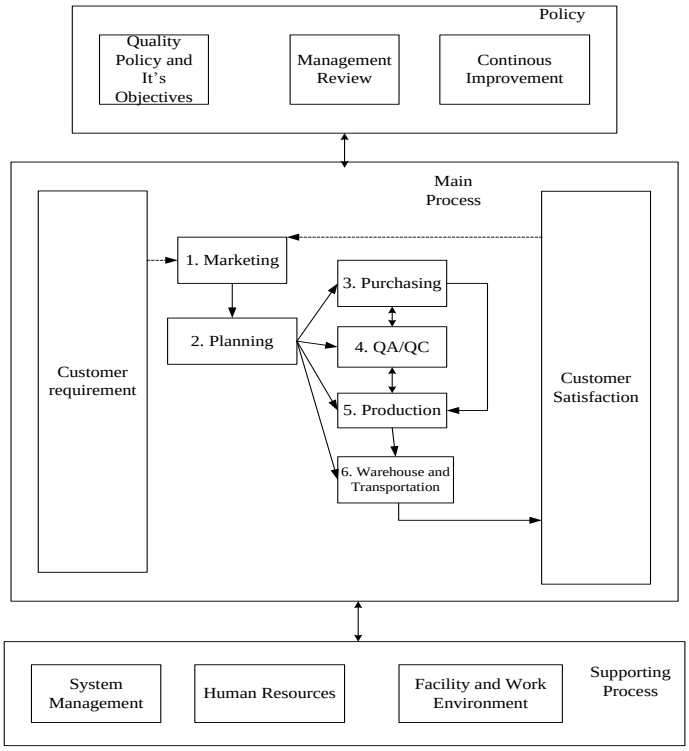

Figure 2 Interaction between Process CV Citra Dragon (source: CV Citra Dragon)

4 Formulation of Requirements Document

The required quality documents can be seen in the business process CV Citra Dragon in Figure 3. Based on the business process, it can be seen that the document needs to be prepared for hydrotiller related major processes and fulfilment requirements of the clauses of ISO 9001: 2008 can be seen in Table 1.

Table 1 List of Requirements Document

Clause	Main Processes	Existing Document	Documents Required
7.1 Planning of product realization	Planning	Production planning for *tresher*	Production planning for *hydrotiller*
7.3 Design and development	Planning	Tresher Product design and development stages	Hydrotiller Product design and development stages
7.4 Purchasing	Purchasing	Raw material purchasing information for tresher	Raw material purchasing information for hydrotiller

Table 1 List of Requirements Document (Continued)

Clause	Main Processes	Existing Document	Documents Required
7.5 Production and service provision	Production, QA/QC, storing, dan delivery	Tresher production process control, tresher identification and traceability, and tresher	Hydrotiller production process control, hydrotiller identification and traceability, and
8.2 Monitoring and maesurement	Marketing, customer satisfaction and feed back	Customer satisfaction measurement for tresher and customer complaints	Customer satisfaction measurement for tresher and customer complaints

5 Preparation of Documents

Procedure

The procedures established in this study, are arranged based on the structure and format specified in ISO / TR10013: 2008 guidance in making quality management system documentation. The procedures consist of the title, purpose, scope, references, definitions, responsibilities, descriptions of activities and related documents. Naming and numbering the procedure is done by following the rules of naming and numbering of existing procedures such as “Product Realization Procedure” (PRP) for the procedures relating to the product procurement process, “Management System Procedure” (MSP) for procedures relating to management activities, and “Resources Procedure” (RP) for the procedures related to resource management.

The procedure prepared were design and product development procedure, supplier evaluation procedure, purchasing procedure, raw material verification procedure, production process control procedure, procedure for the identification and traceability of products, preservation procedure, and customer satisfaction survey procedure. These procedures are based on the processes that have been running in CV Citra Dragon. The example of procedures that made can be seen in appendix A.

Work Instruction

Work instructions are detailed descriptions on how to perform and record the work. Work instructions were developed from the operational activities and hydrotiller production process. The prepared work instructions of hydrotiller state the objectives, scope of work with reference to other related documents, the person in charge, the necessary raw materials, machinery and equipment used, and a description of the process of making hydrotiller. Naming the work is done by following the instructions naming rules of existing work instructions, namely, Work Instructions Product Realization (WIRP). The numbering follows the numbering done work instructions WIRP manufacture of tresher and add a number 03 to distinguish between tresher and hydrotiller thus become "WIRP02.03 Manufacture of Hydrotiller ". The example of work instruction that made can be seen in appendix B.

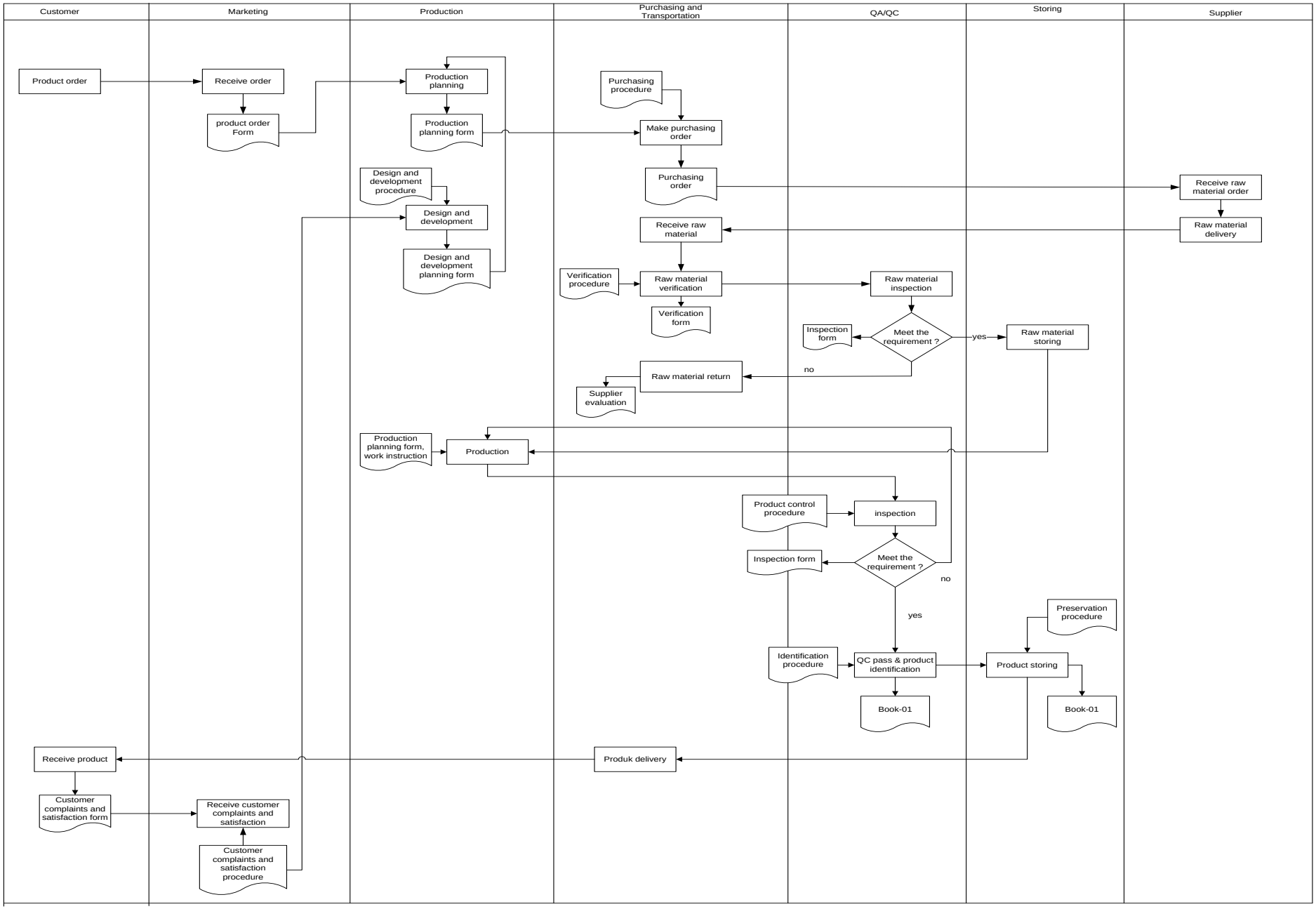

Figure 3 Business Process CV Citra Dragon

Form

Forms were designed to record the results achieved or as evidence to show that an activity in a documented procedure has been executed. Therefore, the naming and numbering recording form refers to the related documented procedures. For example, the procedure “PRP 01.02 Design and Development Procedure" is related to the recording form " PRF 01.02.01 Planning of Hydrotiller Design and Development " and "PRF 01.02.02 Evaluation and Validation of Hydrotiller Design and Development". The example of form that made can be seen in appendix C. Summary of procedures can be seen in Table 2.

Table 2 Summary of Documents Created

ISO Clause	2nd Level Document	3rd Level Document	4th Level Document	Others Document
7.1 Planning of product realization	-	-	-	*Quality Plan*
7.3 Design and Development	Design and development procedure	Work instruction of hydrotiller production	Hydrotiller Design and development Form	-
			Hydrotller Evaluation dan Validation Design	
	Planning and production process procedure		Hydrotiller production planning Form	
7.4 Purchasing	Purchasing of raw material	-	Supplier evaluation Form	-
			List of Supplier	
	Purchasing procedure		*Purchasing Order*	
	Material receiving procedur		Material verification sheet	
			Material inspection sheet	
7.5 Production and service provision	Production Process Control Procedure	-	Production Process Inspection Sheet	-
	Identification and Traceability Procedure		-	Book- 01 Identification and product delivery
	Products Preservation Procedures			
8.2 Monitoring and measurement	Customer Satisfaction Measurement Procedures	-	Customer Satisfaction Measurement Form	-
	Customer Complaints Handling Procedures		Handling Customer Complaints Form	-

Author

6 Conclusion

This paper has described the development of QMS documents for Hydrotiller production unit. The QMS documents required in the hydrotiller production unit are for the second, third, and fourth level document including procedure, work instruction, and form. Preparation of these documents is based on existing requirements in the clause of ISO 9001: 2008 quality management system standard as used. Making these documents can help in certification of *SNI* for hydrotiller. The next stage will involve CV Citra Dragon implementing the QMS document that was developed in this research to expand the scope of their quality management system.

Future studies should assess the performance of the quality management system implemented in CV Citra Dragon by evaluating the fulfilment of ISO 9001: 2008 requirements with the actual practice.. It is hoped that the system will be of great benefit for this medium sized company and for other companies to follow suit.

References

Amitava, Mitra.(1998). *Fundamental of Quality Control and Improvement 2nd ed*. New Jersey : Prentice Hall

Badan Standarisasi Nasional (2008). *ICS.03.120.10*. Jakarta: Badan Standarisasi Nasional.

Bakhtiar, Arfan dan Akhmad Syakhroni. (2005). *Process Documentation in Injection Molding Machine Assembly Unit as Preparation of Quality Management System ISO 9001: 2000 Implementation (Case Study in PT. XYZ). Transistor*. 5(2), 46 -59.

CV. Nugraha Chakti Consultant.(2012). *Preparation of Action Plan for Development of Agriciltural Equipment Leading Industry in West Sumatera*. Padang

Dwi, Christine K.S., L. Agustina, dan V. Carolina. (2012). Theoretical Study of the Quality Management System in Small and Medium Enterprises Facing the Challenges of Globalization. *4 th National Seminar and Call for Papers Indonesia Management Forum: "Indonesia Family Busines Sustainibility*. 13-14 November 2012. Ina Garuda Hotel, Yogyakarta

Garvin, David. (1988). *Managing Quality The Strategic and Competitive Edge*. New York : The Free Press

International Organization for Stadardization (2001). ISO/TR 10013. Geneva : International Organization for Stadardization.

Ho, Samuel KM. (1999). *Operations and Quality Management*. London : International Thomson Business Press.

Pandjaitan, L.E., M. Syamsun, dan D. Kadarisman. (2011). *Study of QMS Implementation Level on SME's Performance in Nata de Coco Agro-Industry Sector in Bogor* . *Manajemen IKM*. 6(2). 117 - 124

Sinaga, Febi S.M. (1998). *Study of Quality Management System and Food Safety Internship Case in PT Tri Kunci Mas Industri Palembang*. Institut Pertanian Bogor. Bogor.

Tague, Nancy R. (2005). *The Quality Tool Box 2nd ed*. Milwaukee : ASQ Quality Press